The bed-rock series is, as usual, in places covered by several hundred feet of Neocene gravels and rhyolitic and andesitic tuffs, the gently sloping top of the andesitic ridges forming a principal feature of the landscape.

The Neocene auriferous gravels have been extensively worked in the Nevada City and Banner Hill districts, both by the drifting and the hydraulic processes, and considerable ground still remains which probably can be profitably worked. The gold-quartz veins are numerous and belong to several distinct systems. They are found in any of the formations represented on the sheet, and generally cross the contacts without change. In the Banner Hill district the veins are narrow but rich, and have a general east-west direction and a northerly or southerly dip. In the Nevada City district the quartz veins have a general north-south direction and an easterly dip of of about 45°. Large dislocations producing over-thrust faults have occurred along several of the veins. In the Grass Valley district there is one system with a west-northwest direction and a steep northerly or southerly dip. On this system the celebrated Idaho mine is located. Most of the veins in the central and southern part of the district have a northerly direction and a flat easterly or westerly dip. The veins are often accompanied by strongly developed sheeting of the country rock.

SCIENTIFIC JOURNALS.

AMERICAN JOURNAL OF SCIENCE.

THE June number begins with an article by Theo. Holm, the fourth in a series of studies on the Cyperaceæ. This contains a full morphological and anatomical study of the species *Dulichium*, and is illustrated by a page of figures. J. C. Branner discusses the subject of bacteria in relation to the decomposition of rocks. The literature of the subject is reviewed and references given to various authors who have believed that the bacteria played an important part in this direction. The author decides, however, that it is highly improbable that any considerable amount of rock decomposition is due to this cause. J. H. Pratt and H. W. Foote describe a new mineral species from the Corundum mine, of Buck Creek, Clay county, North Carolina, to which they have given the name *wellsite*, after Professor H. L. Wells, of New Haven. The mineral belongs to the zeolites and is a silicate of aluminum, barium, strontium and calcium, crystallizing in the monoclinic system. It is particularly interesting since it forms another member of the Phillipsite group to which the species *Phillipsite*, *Harmotome* and *Stilbite* belong.

Howard D. Day discusses the magnetic increment of rigidity of wires in strong magnetic fields. The special subject discussed is "the increase of resistance to torque produced by the magnetization of twisted wires of various diameters, when the magnetic field increases to many times the amount needed to bring out the ordinary magnetic saturation. The object of the research was to make a clear comparison between the phenomenon of magnetization or magnetic intensity, on the one hand, and the phenomena of magnetic rigidity on the other; to show that the two are quite distinct in character—that the former practically subsides in relatively weak fields, whereas the latter are not as fully complete even in the highest fields applied." The apparatus employed is described and figured, and the results presented in a series of curves. It is seen that "as the fields become stronger the increment of rigidity varies more and more regularly with the twist, the tendency being that in fields indefinitely large the increment of rigidity would be proportional to the twist applied."

P. F. Schneider describes a geologic fault at Jamesville, near Syracuse, N. Y. The interest of the matter lies largely in the fact that this region has been shown to be characterized by a number of igneous dikes. H. L. Wells and H. W. Foote have two articles on chemical subjects, the first describing certain double halogen salts of cæsium and rubidium, and the second being devoted to the double fluorides of zirconium with lithium, sodium and thallium.

A. St.C. Dunstan, M. E. Rice and C. A. Kraus give the results of some observations made on the broadening of sodium lines by intense magnetic fields. Their results confirm the recently published work of Zeeman. They state that using fields ranging from 0 to 7800

C.G.S. units, they have found that the percentage broadening is directly proportional to the field strength; the absolute amount for sodium in a unit field being 11.46×10^{-6} Angström units.

A. A. Michelson describes some recent experiments, having as their object the discussion of the question as to whether there is a relative motion of the earth and the ether. Light from a certain source was separated into two pencils by a plane-parallel glass plate, and carried by two equal paths back to the observing telescope, where the interference fringes resulting could be observed. The apparatus was set up in a vertical east and west plane, the path being 200 feet long and 50 feet high. In order to eliminate disturbances due to temperature, the path of the light was inclosed in an iron pipe exhausted to within $\frac{1}{100}$ of an atmosphere. It was then found possible to measure the position of the central bright fringe to within something like $\frac{1}{20}$ of a fringe-width. The results of the measurements go to show that if there is any displacement of the fringes it is less than $\frac{1}{20}$ of a fringe. Hence it follows that the earth's influences upon the ether extends to distances comparable to the earth's diameter. The author concludes by saying that with these results before us we are driven to one of the three following extraordinary conclusions:

"1. The earth passes through the ether (or rather allows the ether to pass through its entire mass) without appreciable influence. 2. The length of all bodies is altered (equally?) by their motion through the ether. 3. The earth in its motion drags with it the ether even at distances of many thousand kilometers from its surface."

SOCIETIES AND ACADEMIES.

GEOLOGICAL SOCIETY OF WASHINGTON, MEETING OF MAY 12, 1897.

UNDER the title 'Physiography of the West Coast of Peru,' Mr. S. F. Emmons described some of the prominent physiographic features noted by him during a recent and rather hurried journey along the west coast of Peru as far as 16° south latitude, and on a trip on the Oroya railroad from Lima up to the western crest of the Andes and back.

First, he noticed the remarkable difference in rainfall and consequent change in vegetation experienced in the few hours' sail from the mouth of the Guayaquil River, in Ecuador, to the most northern part of Peru. From a region of copious rains and tropical luxuriance of vegetation and often dense forests one passes, over night, to a region where it rains once in seven years, and farther, to where it is absolutely rainless. As far as seen, there is no tree growth on the west slope of the Andes in Peru. In the larger valleys, on the other hand, where irrigation is possible, sugar, cotton, and all varieties of cereals, vegetables and fruits flourish under cultivation. The most evident cause of this condition of things lies in the fact that the wind along the coast blows almost continuously from the south, coming from a colder to a warmer atmosphere, or one whose capacity for carrying moisture is constantly increasing. Hence there is no condensation until the wind currents strike the high mountain slopes. In Ecuador the influence of the highly-charged equatorial currents is felt, and near the mouth of the Guayaquil River the continental watershed pushes westward to within 50 miles of the coast, thus presenting a condensing barrier on the land to the northward-moving currents.

A second striking feature is the enormous extent to which the coast bluffs and the northern slopes of the mountains that approach the sea are covered by white drifting beach sands borne along by the same prevailing south wind. At one point these sands, beautifully ripple-marked, completely mantled the southeast side of a deeply cut mountain valley to an elevation of four to five thausand feet above the sea level, and sand fields were observed inland, along north and south depressions in the elevated plateaux or pampas, 40 to 50 miles from the coast.

Striking evidences of recent elevation and subsidence of the coast regions are most frequent, and where the coast line is formed, as it frequently is, of soft and readily disintegrable Tertiary beds it is seen to be rapidly wearing away under the influence of the long and powerful waves of the Pacific Ocean. Near Pacasmayo a river valley is seen to have been